REMARKS

Claims 1-26 are all the claims pending in the application. New claim 26 has been added based on, for example, page 1 of the specification.

Entry of the above amendments is respectfully requested.

Initially, the Examiner is respectfully requested to return a signed and initialed copy of the Form PTO/SB/08 A & B (modified) filed with the IDS on August 4, 2005 with the next communication.

I. Rejections of Claims 1-5, 9, 12, 15-17, and 19-21 under 35 U.S.C. § 103(a)

Claims 1-5, 9, 12, 15, 17 and 19-21 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Pluim (US 6,322,859) in view of the ASM Handbook ("Surface Engineering of Carbon and Alloy Steels" in vol. 5: Surface Engineering, 1994) and Stinnett (WO 96/22841).

Claim 16 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Pluim (US 6,322,859) in view of the ASM Handbook ("Surface Engineering of Carbon and Alloy Steels" in vol. 5: Surface Engineering, 1994) and Stinnett (WO 96/22841) further in view of Cote (D.R. Cote et al., Plasma-assisted chemical vapor deposition of dielectric thin films for ULSI semiconductor circuits, *IBM Journal of Research and Development,* vol. 43, issue ½, 1999).

Applicants respectfully traverse the rejections.

Pluim teaches a process for producing a decorative material by applying very thin layers of metal to the surface of a textured flexible substrate having a texture and that a surface roughness of at least 0.051 mm is coated by a metal layer less than 2500 Å thick, still showing the surface aspect of the substrate (reliefs and depressions). Typically, the substrate is a fabric, a wallpaper, a plastic (*see* col. 2, lines 29-37 and col. 4, lines 32-38) and the metal is gold or other materials, possibly as oxides or nitrides, sulfides, carbides (*see* col. 4, lines 39-

49). Pluim discloses that the metal is vapor-deposited under vacuum and that a second metal layer can be then deposited, provided the total thickness of the coating is not over 2500 Å.

In contrast, the substrate of the present invention is exclusively metallic. That is, claim 1 recites "coating the surface of a metal material" in the preamble and "the metal is first coated with a layer of a metal or a metal alloy" in the body.

Although Pluim discloses various materials that can be used as a substrate, Pluim does not disclose metal as one of the materials.

The Examiner relies on the ASM Handbook as teaching coating carbon steel strips with tin in the thickness range of 0.38 to 1.5 μm.

However, based on the disclosure of the ASM Handbook, one of ordinary skill in the art would not modify Pluim by using a metal substrate. First, as noted by the Examiner, the ASM Handbook merely discloses that a low carbon steel may be coated with tin, generally with less than 2 μm. Second, Pluim specifically discloses coatings flexible substrates and defines a "flexible" substrate as one which can be folded back on itself (180 degrees) and reversed without sustaining damage to the physical properties of the metal. *See* col. 2, lines 1-4. Thus, one of ordinary skill in the art would not be motivated to replace the flexible substrate of Pluim with a rigid substrate, such as carbon steel.

In addition, the aim of Pluim is to obtain a layer sufficiently thin so that the relief and the texture of the substrate remains visible after coating, not to obtain a metal deposit providing an optical (visual) 3-D effect as in the present invention. Thus, the final deposit of Pluim is physically and really tridimensional, whereas in the present invention, the deposit is generally smooth, but provides an optical (visual) effect which is analogous to a hologram. To this end, as recited in claim 1, the substrate must have a crystallographic structure (which is not required for the substrates of Pluim and indeed is not so), but not forcibly a roughness or a

texture such as the ones of a fabric or a paper.

Also, the coatings of Pluim are very thin (0.25 µm at most), while the metal coatings of the present invention may reach, for example, 3.5 µm (*see* Examples).

Claim 1 further recites that the first coating is subjected to thermal processing using a rapid heating means in order to bring the surface of the first coating to a temperature of between $0.8T_f$ and T_f. There is no indication in Pluim that heating of the first layer is performed in order to bring it to a temperature close to its melting temperature or for any other reason, in particular when the deposition of a second metal layer is then to be performed.

The Examiner asserts that "one would have a reasonable expectation of success in applying the process of Pluim to coat a rigid substrate, because if the sputtered films can adhere to flexible materials, then they are surely sufficiently adherent to bond to a mechanically simpler rigid substrate that puts less strain on the film during use".

Applicants respectfully disagree. As discussed above, the technical problem solved by the present invention is not a matter of adherence of the coating on the substrate, but obtaining a particular visual effect, different from the ones explicitly obtained by Pluim. Nothing teaches or suggests that the same effect would or could be obtained in the case of Pluim. And the visual effect of the invention has nothing to do with the rigidity or flexibility of the substrate, as well as with the adherence of the coating. Thus, based on the disclosure of Pluim, one of ordinary skill in the art would not have a rational reason to coat a rigid substrate or have a reasonable expectation of success.

In addition, as acknowledged by the Examiner, there is no disclosure in the ASM Handbook of a thermal treatment of the Sn layer, then of its coating by another metallic layer under the conditions recited in claim 1.

The Examiner takes the position that one of ordinary skill in the art would combine

Stinnett with Pluim and the ASM Handbook because Stinnett teaches that a metal coating has greater adhesion to a substrate if a first coating is treated with a rapid thermal anneal to form an intermediate layer and result in a stronger coating structure.

Stinnett describes a device for depositing a material onto a substrate (for example a metal substrate, *see* page 6, lines 5-7) and the thermal treatment of the product so obtained by a pulsed ion beam. The passages of pages 2 and 3 concerning prior art insist on the need to obtain a good adhesion of the successive layers coating a metallic substrate on the substrate and on each other. The proposed solution consists in sending a high intensity pulsed flux of ions for annealing, melting or vaporizing the surface of the sample and the approaching layer during the growing of the layer. This is confirmed on page 7, lines 5-9, in which it is stated that the thermal treatment of the upper layer is periodically performed while the layer is growing. Furthermore, for example on page 12, lines 22-25, it is disclosed that this thermal treatment is applied to the first deposited layer, before the second layer is deposited.

There is no indication in Stinnett of the respective thicknesses of the layers deposited before and after the thermal treatment, so that it is impossible to know if an optical 3-D effect is obtained, due in particular to the respective maximal thicknesses of the layers and the crystalline structure of the substrate.

Consequently, Stinnett is not relevant since features of the present invention are missing, or in combination with the other cited documents, particularly because there is no reason to combine Stinnett with Pluim, which does not use a metallic substrate.

Additionally, if Pluim were modified to heat a first metal layer deposited onto such a substrate, one knows nothing about the thickness the second layer, which would then be deposited onto the first layer, would have.

For at least the above reasons, Pluim in combination with the secondary references does

not teach or suggest the present invention according to claim 1.

In fact, the Examiner's positions are a result of a posteriori reasoning; all the more because none of the references relates to or discusses optical 3-D effect.

Finally, with respect to Cote, it discloses plasma assisted vapor deposition and is concerned with the coating by dielectric layers of semi-conductors and not of metals. Thus, it does not cure the deficiencies of Pluim or the other references and provides no further relevant information.

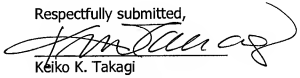
In view of above, it is respectfully submitted that claims 1-5, 9, 12, 15, 16, 17 and 19-21 are patentable over the cited references, and withdrawal of the rejections are respectfully requested.

II. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below. The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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